Complete Summary

GUIDELINE TITLE

Management of the clinically inapparent adrenal mass (Incidentaloma).

BIBLIOGRAPHIC SOURCE(S)

Management of the clinically inapparent adrenal mass ("incidentaloma"). NIH Consens Statement Online 2002 Feb 4-6;19(2):1-23.

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Clinically inapparent adrenal masses ("incidentalomas")

GUIDELINE CATEGORY

Evaluation
Management
Treatment

CLINICAL SPECIALTY

Endocrinology
Internal Medicine
Oncology

Pathology
Radiology
Surgery

INTENDED USERS

Health Care Providers
Patients
Physicians

GUIDELINE OBJECTIVE(S)

- To provide health care providers, patients, and the general public with a responsible assessment of currently available data regarding the management of clinically inapparent adrenal masses ("incidentalomas").
- To address the following key questions:

  What are the causes, prevalence, and natural history of clinically inapparent adrenal masses?

  - Based on available scientific evidence, what is the appropriate evaluation of a clinically inapparent adrenal mass?
  - What criteria should guide the decision on surgical versus nonsurgical management of these masses?
  - If surgery is indicated, what is the appropriate procedure?
  - What is the appropriate follow-up for patients for each management approach?
  - What additional research is needed to guide practice?

TARGET POPULATION

Patients of all ages with clinically inapparent adrenal masses ("incidentalomas")

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Evaluation

1. Hormonal evaluation
   - Overnight (1-mg) dexamethasone suppression test and a measurement of fractionated urinary and/or plasma metanephrines
   - Serum potassium and plasma aldosterone concentration-plasma renin activity ratio in patients with hypertension
   - 24-hour urine catecholamine test
   - Determination of plasma free metanephrines
2. Radiologic evaluation
   - Computed tomography (CT) scan
   - Magnetic resonance imaging (MRI)
   - The following tests are not widely available, and there are insufficient data regarding their clinical usefulness:
     - Radionuclide scintigraphy using iodocholesterol (NP59) for evaluating adrenocortical lesions

- I-131 metaiodobenzyl guanidine (MIBG) for evaluating pheochromocytoma
- Positron emission tomography (PET)

3. Fine-needle Aspiration

Management/Treatment

1. Surgical vs. nonsurgical management
2. Open vs. laparoscopic adrenalectomy
3. Perioperative glucocorticoids
4. Patient follow-up

MAJOR OUTCOMES CONSIDERED

- Causes and prevalence of clinically inapparent adrenal masses
- Sensitivity and specificity of diagnostic tests
- Surgical complication rates for various approaches
- Morbidity and mortality after surgical excision of adrenocortical carcinoma

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Literature Search

Studies were identified primarily through a MEDLINE® search of the English language literature published between 1966 and October 2000. The Evidence-based Practice Center (EPC) also consulted technical experts and examined references of selected review articles to identify additional studies. Articles that met the inclusion criteria were incorporated into the evidence report. The staff at the National Library of Medicine conducted a search in October 2000 on the following databases: MEDLINE®, PreMEDLINE, BIOSIS®, and EMBASE®. The content of the original key questions was later expanded, and the EPC conducted an updated search in March 2001 in the MEDLINE database. Additional subject headings were included to address questions on diagnostic accuracy, surgical complication rates, morbidity and mortality outcomes for adrenal masses, and monitoring strategies for untreated adrenal masses.

Study Selection

The literature searches yielded a total of 5,386 independent citations. The abstracts were screened and reports published only as letters or abstracts in proceedings were rejected from further consideration. The EPC retrieved 602

articles. Specific inclusion criteria and methods of synthesis were developed for each of the key questions. In general, the EPC included all English language studies with at least 10 human subjects. There were no age limitations.

NUMBER OF SOURCE DOCUMENTS

About 194 articles met the inclusion criteria for one of the key questions and were included in the evidence report. Forty-five studies provided data about the prevalence of incidentaloma or the distribution of adrenal pathologies. Thirty-one studies evaluated various diagnostic tests to differentiate adrenal masses. Over 80 studies provided outcome information on various adrenal surgical techniques. Thirty-two studies reported prognostic information on patients with adrenal carcinoma after surgical excision, and nine articles reported results of follow-up strategies.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

From the articles that met the inclusion criteria, the Evidence-based Practice Center (EPC) abstracted detailed information into evidence tables and summary tables. The EPC also assessed the methodological quality of studies that evaluated diagnostic performance and adrenal surgery. Using a three-category scale, the EPC graded these articles based on study design, conduct, and reporting. The EPC also assessed the applicability of studies to the population of interest as determined by study location, tumor size, and tumor type.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Consensus Development Conference)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

A two-and-a-half-day state-of-the-science conference on Management of the Clinically Inapparent Adrenal Mass ("Incidentaloma") was convened on February 4-6, 2002. Participants included a non-Federal, nonadvocate, 12-member panel representing the fields of medicine, surgery, endocrinology, pathology, biostatistics, epidemiology, radiology, oncology, and the public. In addition,

experts in these same fields presented data to the panel and to a conference audience of approximately 300.

Answering predefined questions, the panel drafted a statement based on the scientific evidence presented in open forum and the scientific literature. The draft statement was read in its entirety on the final day of the conference and circulated to the audience for comment. The panel then met in executive session to consider the comments received and released a revised statement at the end of the conference.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The draft statement was read in its entirety on the final day of the conference and circulated to the audience for comment. The panel then met in executive session to consider the comments received and released a revised statement at the end of the conference. The statement was made available on the World Wide Web at http://consensus.nih.gov immediately after the conference.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

- The management of clinically inapparent adrenal masses is complicated by limited studies of incidence, prevalence, and natural history, including the psychologic impact on the patient who is informed of the diagnosis. Improvements in the resolution of abdominal imaging techniques combined with increased use of abdominal imaging suggest that the prevalence of clinically inapparent adrenal masses will continue to escalate. The low prevalence of adrenal cortical carcinomas and the relatively low incidence of progression to hyperfunction call into question the advisability of the current practice of intense, long-term clinical follow-up of this common condition.
- All patients with an incidentaloma should have a 1-mg dexamethasone suppression test and a measurement of plasma-free metanephrines.
- Patients with hypertension should also undergo measurement of serum potassium and plasma aldosterone concentration/plasma renin activity ratio.
- A homogeneous mass with a low attenuation value (less than 10 Hounsfield units [HU]) on computed tomography (CT) scan is likely a benign adenoma.

- Surgery should be considered in all patients with functional adrenal cortical tumors that are clinically apparent.
- All patients with biochemical evidence of pheochromocytoma should undergo surgery.
- Data are insufficient to indicate the superiority of a surgical or nonsurgical approach to manage patients with subclinical hyperfunctioning adrenal cortical adenomas.
- Recommendations for surgery based upon tumor size are derived from studies not standardized for inclusion criteria, length of follow-up, or methods of estimating the risk of carcinoma. Nevertheless, patients with tumors greater than 6 cm usually are treated surgically, while those with tumors less than 4 cm are generally monitored. In patients with tumors between 4 and 6 cm, criteria in addition to size should be considered in making the decision to monitor or proceed to adrenalectomy.
- The literature on adrenal incidentaloma has proliferated in the last several years. Unfortunately, the lack of controlled studies makes formulating diagnostic and treatment strategies difficult. Because of the complexity of the problem, the management of patients with adrenal incidentalomas will be optimized by a multidisciplinary team approach involving physicians with expertise in endocrinology, radiology, surgery, and pathology. The paucity of evidence-based data highlights the need for well-designed prospective studies.
- Either open or laparoscopic adrenalectomy is an acceptable procedure for resection of an adrenal mass. The choice of procedure will depend upon the likelihood of an invasive adrenal cortical carcinoma, technical issues, and the experience of the surgical team.
- In patients with tumors that remain stable on two imaging studies carried out at least 6 months apart and do not exhibit hormonal hypersecretion over 4 years, further follow-up may not be warranted.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Evidence included presentations by experts; a systematic review of the medical literature provided by the Agency for Healthcare Research and Quality; and an extensive bibliography of incidentaloma research papers, prepared by the National Library of Medicine. Scientific evidence was given precedence over clinical anecdotal experience.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Improvements in abdominal imaging techniques and technologies have resulted in the detection of an increasing number of adrenals incidentalomas.

- Either open or laparoscopic adrenalectomy is an acceptable procedure for the resection of an adrenal mass. Operative mortality associated with adrenalectomy is less than 2 percent. However, the laparoscopic approach may have advantages over the open approach when performed by a surgical team experienced in advanced laparoscopic techniques. These advantages included decreased postoperative pain, reduced time to return to bowel function, decreased length of hospital stay, and the potential for earlier return to work.

POTENTIAL HARMS

Risk of Complications Due to Fine Needle Aspiration

Twelve studies reported on 888 biopsies of adrenal masses in 866 patients. Only two studies explicitly reported data on the risk of metastatic spread due to biopsy. One patient (0.3 percent of subjects with long-term follow-up) with bronchogenic carcinoma had needle tract metastasis after adrenal biopsy. Thirty-six complications (4 percent) were reported, including 26 that were potentially serious. Because of the wide variety of biopsy techniques, unclear or incomplete reporting, and the small study sizes, no reliable estimates can be made about the relative safety of the different biopsy techniques.

Complications of Surgical Approaches to Excise Adrenal Masses

Nine case series of open adrenalectomy, 4 studies comparing open adrenalectomy techniques, 20 series of transperitoneal laparoscopic adrenalectomy, 10 series of retroperitoneal laparoscopic adrenalectomy, 28 studies comparing laparoscopic adrenalectomy to open surgery, and 9 studies comparing transperitoneal with retroperitoneal laparoscopy were evaluated. Overall study quality was poor.

Major complications occurred in 2 to 24 percent of patients and minor complications in 0 to 14 percent. Mortality occurred in 0 to 3 percent of patients. The most common complications included pleural tear, wound infection, bleeding, splenectomy, and urinary tract infection. Four studies comparing the open transabdominal and posterior approaches in 566 patients found similar complication rates with both approaches, but average length of stay was shorter with the posterior approach.

The transperitoneal laparoscopic series included 1,189 patients. Major complications occurred in 0 to 25 percent of patients and minor complications occurred in 0 to 72 percent. Two deaths were reported. The most common complications were bleeding, wound infection, and deep vein thrombosis. The retroperitoneal laparoscopic series included 537 patients. Major complications occurred in 0 to 10 percent of patients and minor complications occurred in 0 to 63 percent. One patient died. The most common complications included retroperitoneal hematoma, subcutaneous emphysema, and pancreatic or splenic injury. Complications were less common in larger studies.

CONTRAINDICATIONS

CONTRAINDICATIONS

At present, relative contraindications to laparoscopic adrenalectomy are a definitive or presumed diagnosis of invasive adrenal cortical carcinoma or circumstances that make a minimally invasive approach technically difficult, such as large tumors.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The statement reflects the panel's assessment of medical knowledge available at the time the statement was written. Thus, it provides a "snapshot in time" of the state of knowledge on the conference topic. When reading the statement, keep in mind that new knowledge is inevitably accumulating through medical research.
- This statement is an independent report of the panel and is not a policy statement of the National Institute of Health (NIH) or the Federal Government.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Resources
Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Management of the clinically inapparent adrenal mass ("incidentaloma"). NIH Consens Statement Online 2002 Feb 4-6;19(2):1-23.

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002 Feb 6

GUIDELINE DEVELOPER(S)

National Institutes of Health (NIH) Consensus Development Panel on Management of the Clinically Inapparent Adrenal Mass ("Incidentaloma") - Independent Expert Panel

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

National Institutes of Health (NIH) Consensus Development Panel

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All of the panelists who participated in this conference and contributed to the writing of this statement were identified as having no financial or scientific conflict of interest, and all signed forms attesting to this fact.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the National Institutes of Health (NIH) Consensus Development Conference Program Web site.

Print copies: Available from the NIH Consensus Development Program Information Center, PO Box 2577, Kensington, MD 20891; Toll free phone (in U.S.), 1-888-NIH-CONSENSUS (1-888-644-2667); autofax (in U.S.), 1-888-NIH-CONSENSUS (1-888-644-2667); e-mail: consensus_statements@mail.nih.gov.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Management of clinically inapparent adrenal mass. Evidence Report/Technology Assessment: No. 56 AHRQ Publication No. 02-E013. Rockville, MD: Agency for Healthcare Research and Quality. February 2002. Available from the AHRQ Web site.
- CME Material. Management of the clinically inapparent adrenal mass ("Incidentaloma"). 2002 Nov 7. Available from the National Institutes of Health (NIH) Consensus Development Conference Program Web Site.

PATIENT RESOURCES

None available

NGC STATUS

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